



Aerosport Products Carbon Fiber RV-7 / RV-9 Symmetrical Instrument Panel (Tip-up Canopy Version)



Installation Guide

Congratulations and thank you for purchasing from Aerosport Products!

Contents: You received two (2) items with your RV7/9 Carbon Fiber Instrument Panel purchase. Included are a carbon fiber instrument panel, and its associated aluminum frame.

Optional Items: Consider these separate items from Aerosport Products that will complement the functionality and look of your new panel!

- [Aluminum Panel Inserts](#)
- [LED Illuminated Rocker Switches](#)
- *Aluminum Air Vents*
- *...and many other quality items at [Aerosport Products](#)*

Notice: Because there are many different possibilities of equipment and configuration available to the consumer....measurement, technique, and positioning of items may vary with each build. It is up to the builder to determine proper placement, edge distance, depth and all other installation aspects for your build. This document serves only as a guide and should not be considered an instruction.

Safety: Proper protection should be taken for hearing and eyes. Also, carbon fiber makes a fine dust when cut that will likely become airborne and can enter your respiratory system. Please also protect yourself with proper breathing protection.

Let's begin!!!

- By now, you have likely made some decisions regarding the avionics you plan to install in your new carbon panel. You have also made the choice of a tip up canopy or slider. Finally, a choice between symmetrical and asymmetrical panel layout. The example in this guide is of an RV-7 tip up, with symmetrical panel. The avionics are Garmin G3X.
- **Tip:** Most avionics manufacturers have scaled images of their EFIS and MFDs available. These are great for planning. You will notice the evolution of the final avionics choices throughout this guide.

Carbon Panel

- **Tip:** Use masking or painter's tape to cover the area you will mark and cut. This makes it much easier to see the work area.



- **Switches / Rockers:** Mark out the spacing for the switches or rockers you have chosen on the tape you've applied to that area. With rockers, it is good to assemble the bezels in advance (these are easily taken apart later) to get the dimensions for your cut. Also, note the overlapping face of the bezel, and center the assembly accordingly.

- Begin the cut in the center of the marked area, just inside the lines. It is good to leave just a little extra material, then use a file to sneak up on the final dimension for the final fit.



- A Dremel with a cutoff wheel works well. Pay attention to the rotation of the tool, as it tends to “run away” unexpectedly in one direction. Just pay attention to this and use light pressure.

- After you have removed the material, compare the cut to the bezel assembly dimensions and file as needed to get a tight fit. Once complete, go ahead and remove the tape.



Rocker bezel assembly installed

- Take a similar approach with toggle switches. It's a good idea to start with a #40 bit to drill all switch locations. Make sure they are centered and aligned while they are small. Gradually increase to larger bits until you reach the needed size for your toggles.



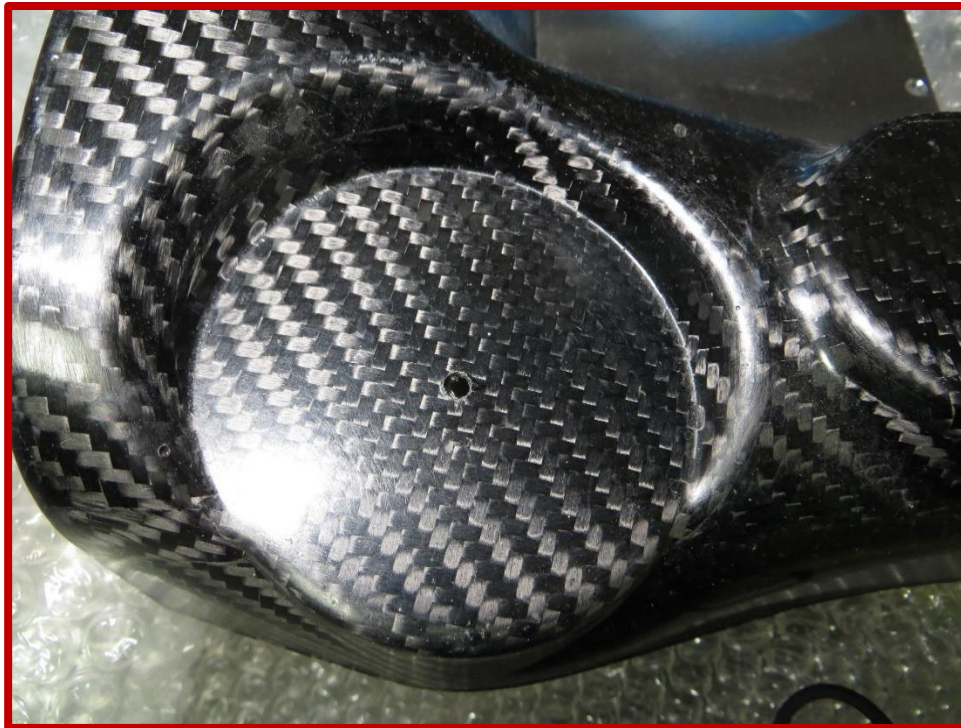
- After cutting and fitting items to the carbon panel, it is a good idea to remove and store those items. We still need to make some more dust!

Aluminum Vents



- Once again, cover the work area with tape. We need to find the center of the vent area, so measure the diameter. There are several methods to find our center, but it's easy to use a compass. Set it to half the diameter, or radius. Go along the circumference of the circle and draw arcs. Rotate your compass to several locations repeating the arcs. This will produce an intersection that should show the center.

- Verify your center point and confirm distance to the edge in several spots from that point. Drill a small hole at the center.



- Verify the needed cut size according to the part you plan to install. A hole saw is a good way to handle this cut. Try to keep the saw parallel to the carbon and use light pressure. The carbon is relatively thin, so take your time and be gentle.

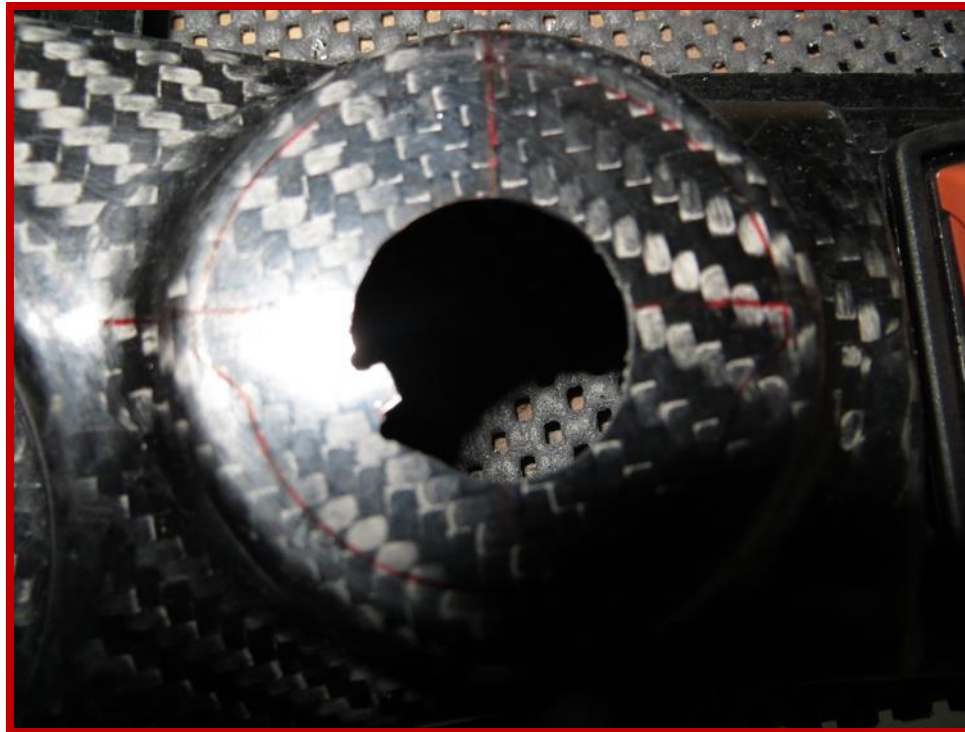


- Repeat this process for the other vent.



Starter Switch

- Repeat the steps in the previous section, “Aluminum Vents” to locate the center of this area. If you have a circle template, it’s even easier to overlay and transfer the crosshairs from the template. Most switch assemblies include a template you can trace.



- The pictured keyed starter switch is from ACS. It requires a tab of material remain, so the switch assembly will not rotate when used. Remove the interior of the area using drills and files, or any means you determine best.



Scribe Lines

- You will see faint scribe lines on the left and right sides of the panel. Use these lines only as a guide. Measure your airframe in relation to this part to get it right. The lower portion of these areas will need to be removed so the panel can slip into place on the airframe. **Review the next few pictures before you cut.**



- Carefully remove this area with the Dremel and small cutoff wheel. As before, take your time and leave a little extra so you can file/sand what's needed. A final fit will eventually be accomplished once the aluminum subframe is in place and the carbon panel is attached to it. You will want to oversize this cut by approximately 1/16" or so at that time to get clearance from the finish of the F-721A- L/R Canopy Decks.



- Initial cut is the height of 721A-L/R. The upper remaining portion of the scribe line will be cut when we look at the tip-up canopy lift struts later in this guide.



- **Tip:** Mask off areas that may already have paint or other finishes. Carbon is VERY abrasive until finished.



Tip-up Canopies

- You will need to cut clearance for the lift struts. There is a continuation of the scribe line on the left and right sides of the carbon panel. Use these scribe lines as guides...not the law. Gently lower your canopy and investigate this clearance. Trim accordingly. Notice the top curve of the scribe line (yellow arrow). This installation needed the curve removed. Verify your situation.



- Trim complete. Leave just a little room for the flex of the canopy when opening and closing.

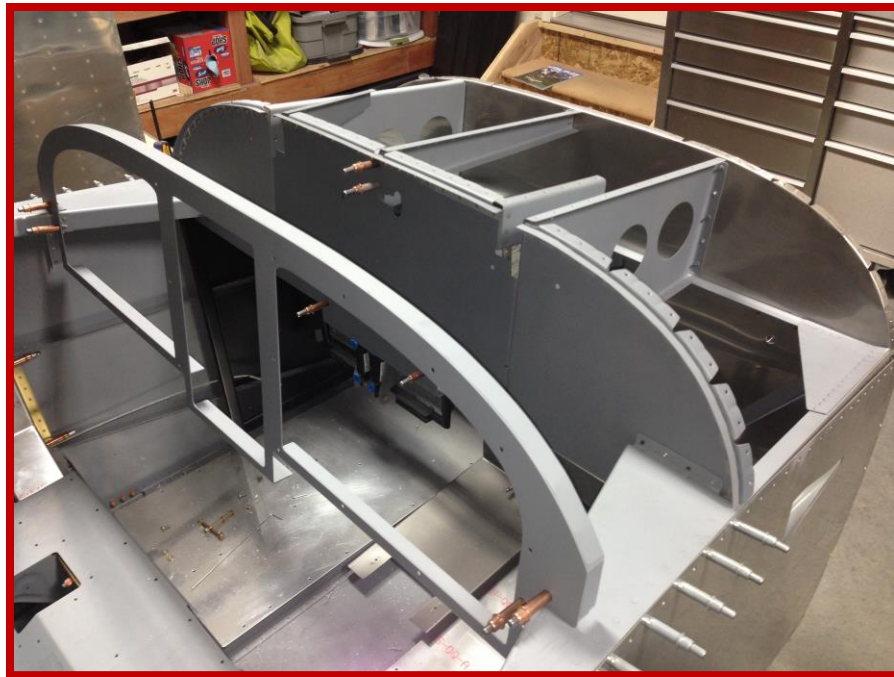


- Canopy strut being held in place to illustrate position. Final trim panel with canopy on plane.

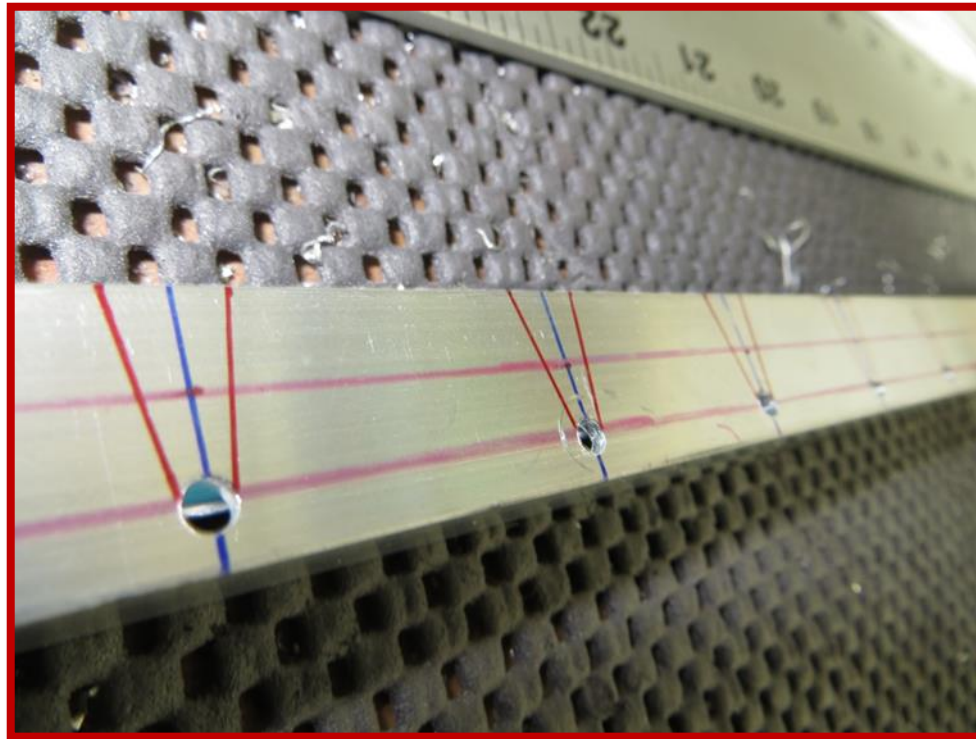


Aluminum Support Frame

- **Tip-up Canopy:** All pictures and guidance depicted in this guide are for the tip-up canopy.
- First, let's determine the fore and aft orientation of the aluminum frame. The flanges of the aluminum frame face **forward**, toward the firewall.



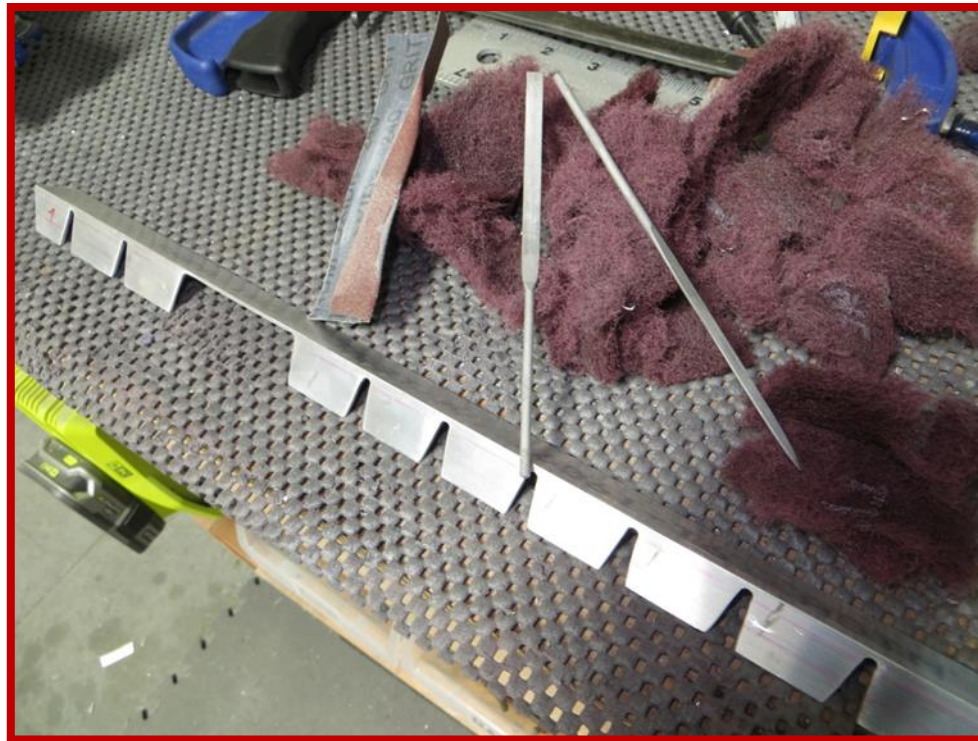
- Follow the Van's Aircraft Kit Plans for your plane to create the reinforcement angle of the instrument panel (Drawing 24A, Part F-703B)
- After marking everything, drill the holes in the F-703B as directed in the kit directions.



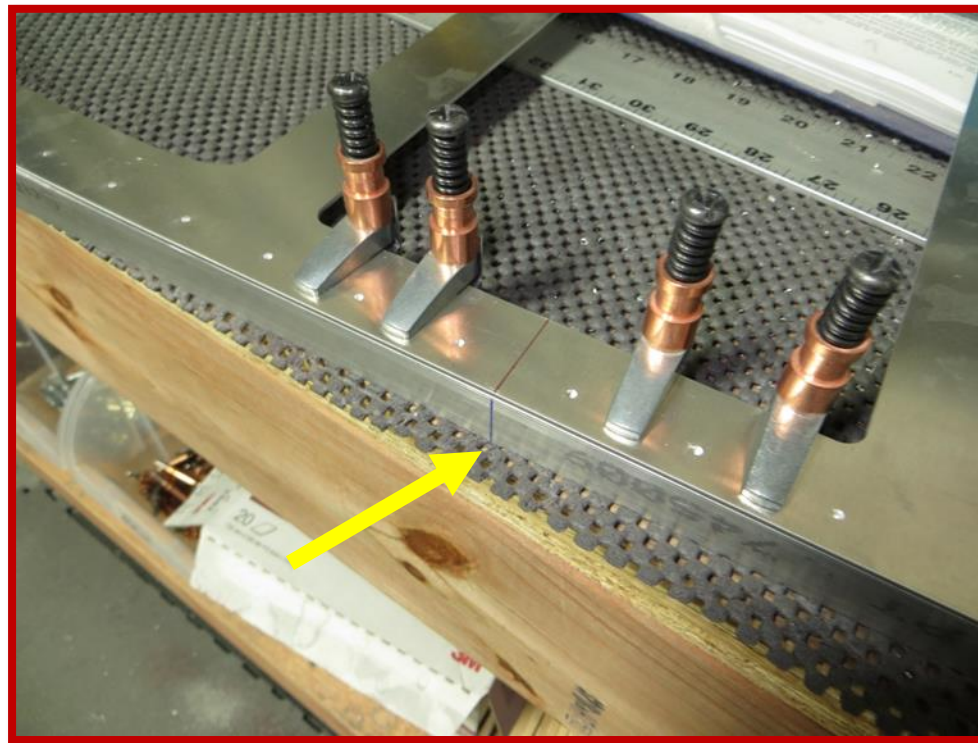
- This angle is difficult to control while addressing all the notches. Using a vice is a good idea.



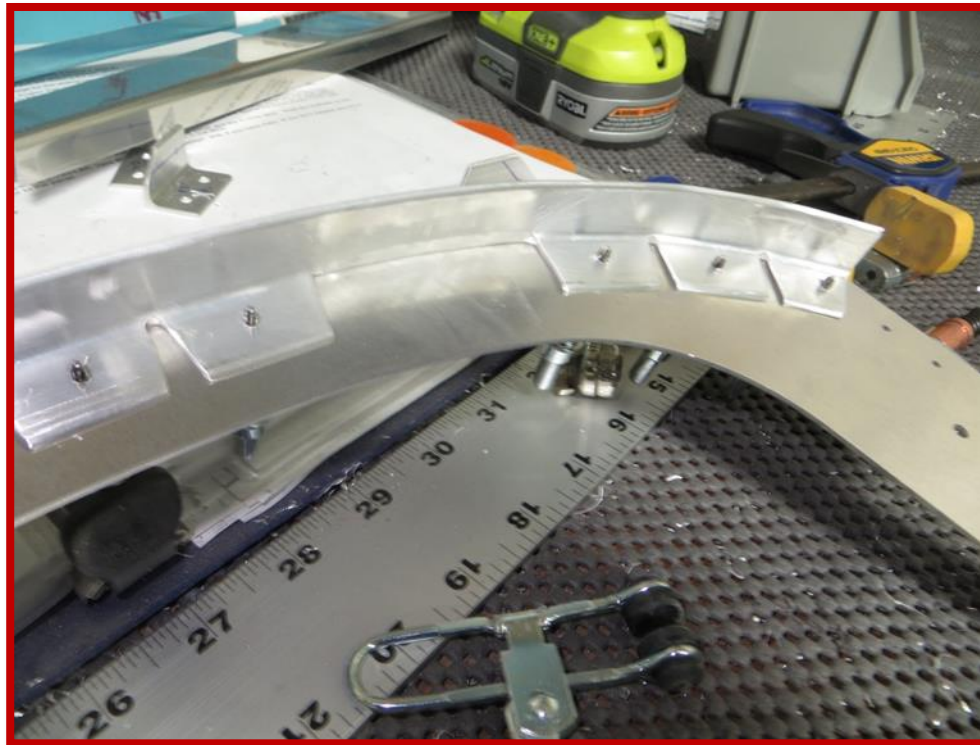
- Take the time to deburr all the notches and edges of this part. We will create a curve with this part. Getting everything smooth will help avoid potential cracks



- Locate and mark the centerline of the aluminum panel frame and the F-703B angle. Align and clamp them on both sides of the centerline. As pictured, the brace should be flush with the edge of the frame. The brace is located on the **forward** side of the assembly.



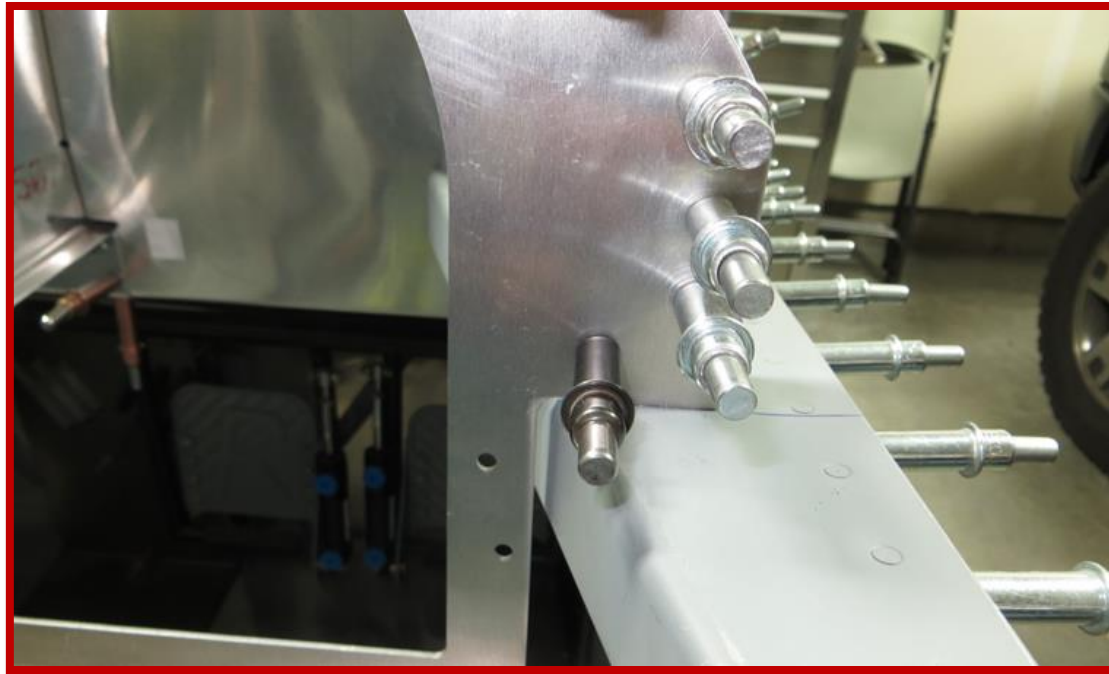
- Begin in the middle and match drill the frame to the brace. Create a nice curve as you drill while hand forming the brace. Remember, the brace should be flush with the edge of the frame. Use clecos in every hole. Match drill the F-703C angles.



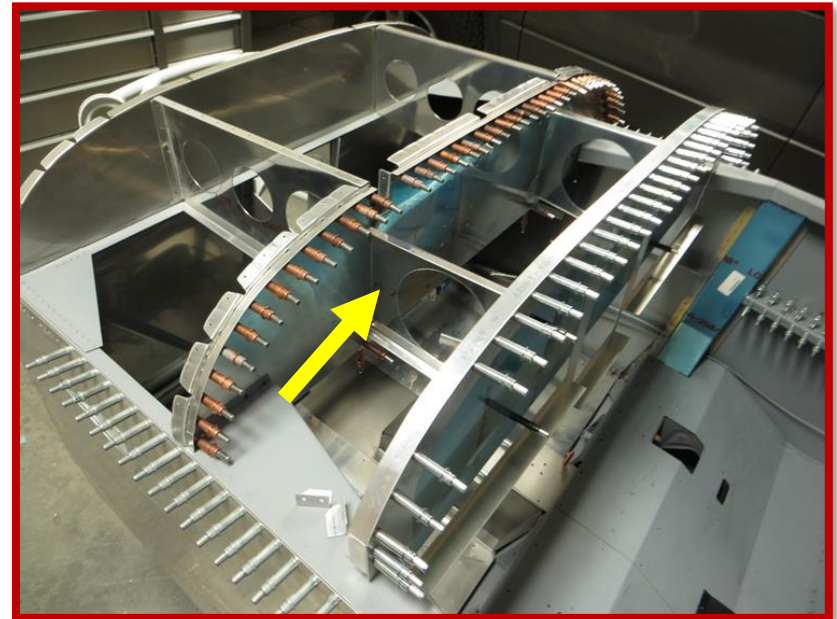
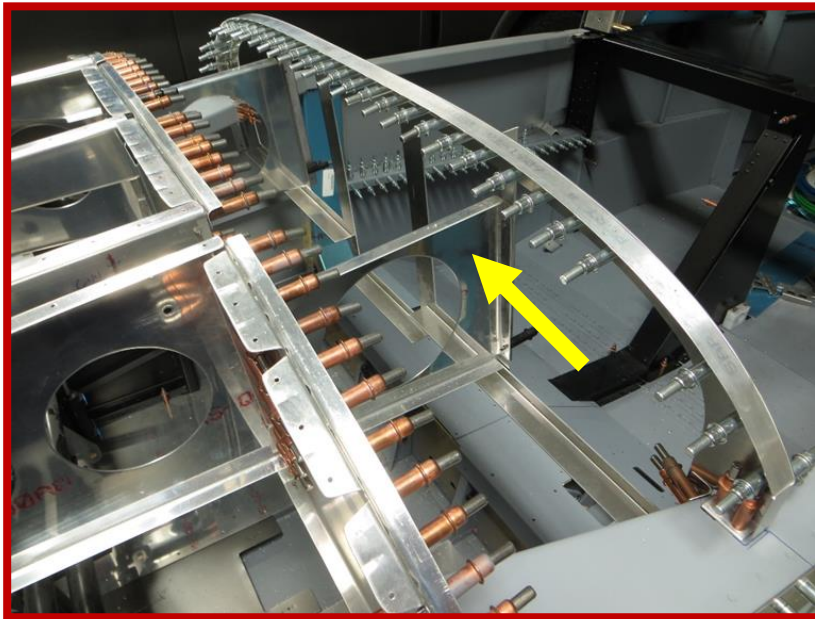
- The F-721 C and D brackets should already be attached (kit plans, Drawing 24).



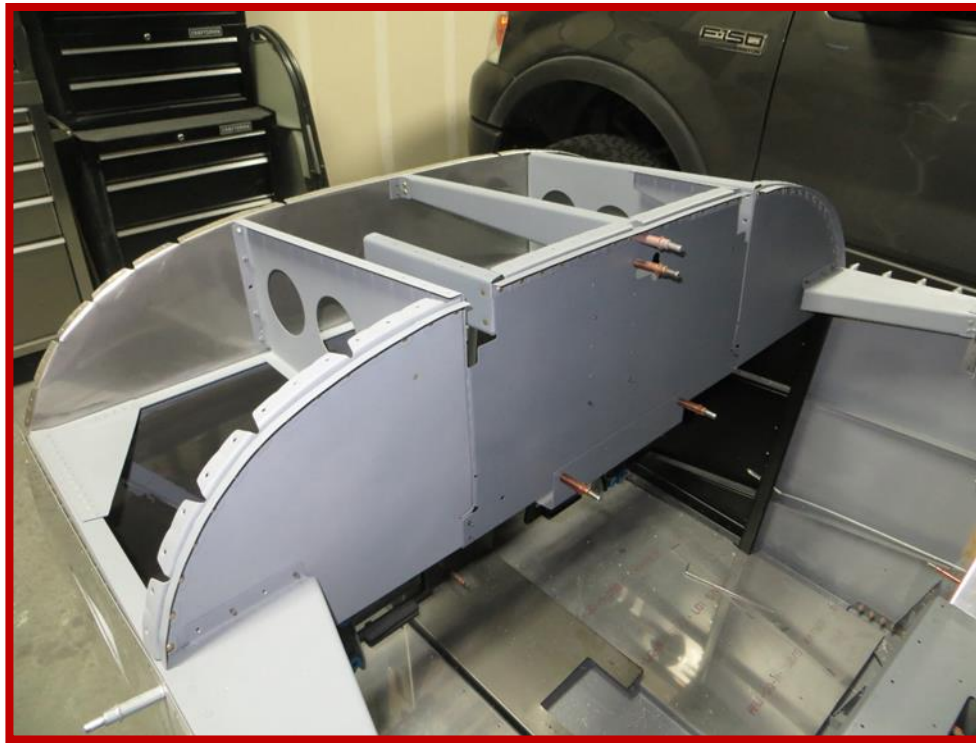
- Go ahead and temporarily attach the panel frame to the F-721 C and D brackets.



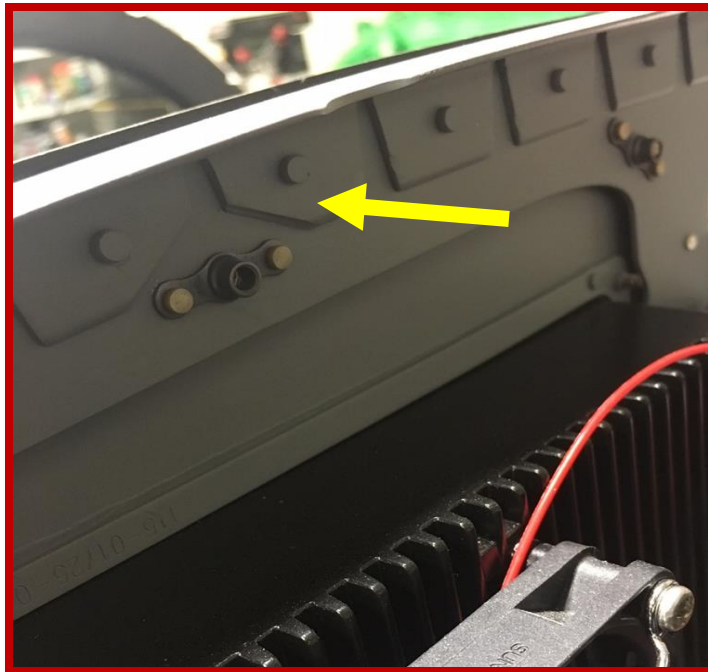
- Pictures showing the panel frame (silver clecos) with the subpanel (copper clecos). Notice the stock location of the F-745 L/R Forward Fuselage Ribs (arrow) in this picture. Depending on your choice of avionics and layout, these may need modified and the aft portion of the rib relocated. There are many discussions on Van's Airforce that illustrate this simple modification. You can also contact Van's Aircraft and speak with Tech Support.



- Illustration of the aft half of the ribs removed. These aft portions will be relocated in later steps.



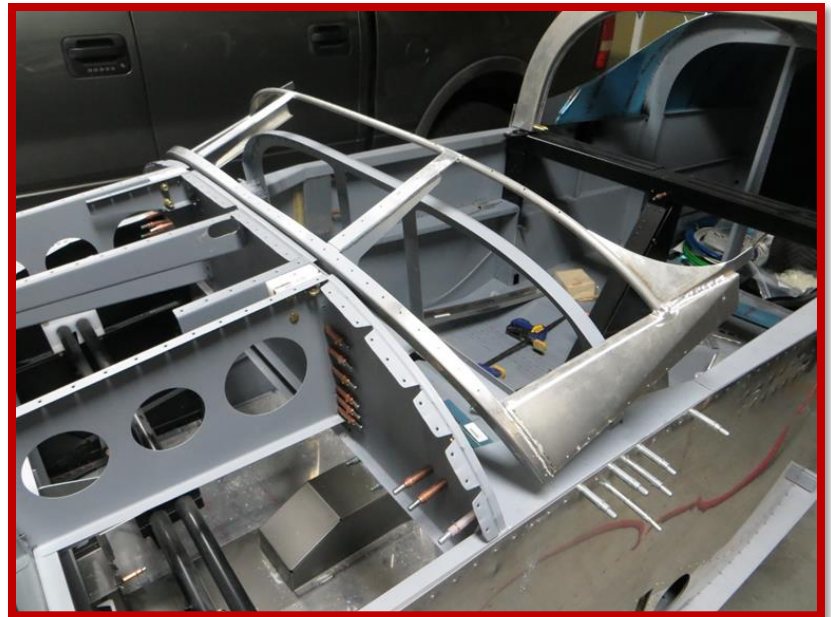
- Disassemble the angles from the frame and deburr all holes. The aft face of the panel frame will need to be machine countersunk for AN426 rivets. Prime all parts as desired.
- **Tip:** This is also a good time to investigate the many nutplates you will later install on the forward side of the panel frame. Nutplates will be used around the perimeter to attach the carbon panel to the frame. A few of these nutplates may be a challenge to position due to interference of the “tabs” created in the flange of the angle. Identifying and trimming those areas now will be much simpler than after riveting.



- Consult Van's Kit Plans for the correct designation for your aircraft type and rivet the angles to the panel frame.



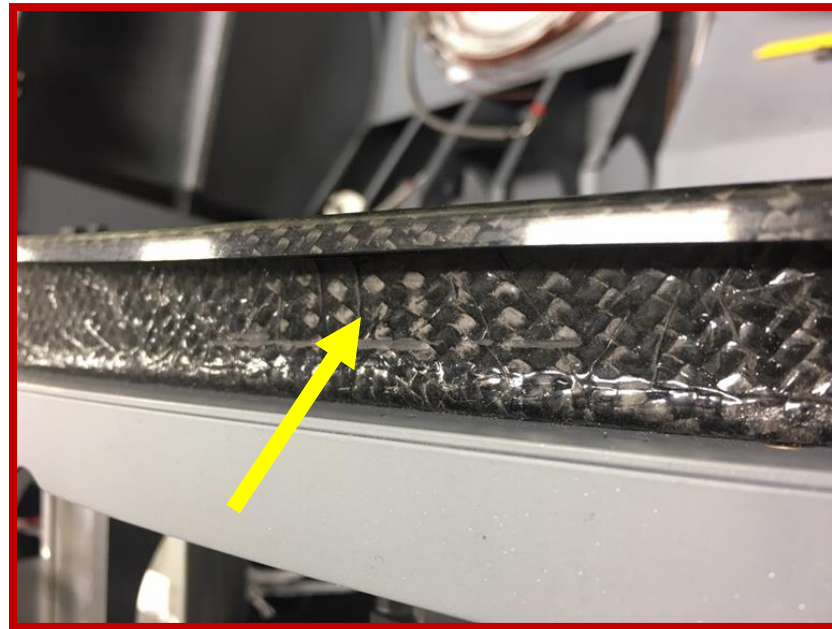
- Check the clearance of the aft tube of the canopy frame in relation to the panel frame. The arced tube should rest just aft of the frame when closed.



- Taking a look at the canopy frame clearance from underneath.
(**Note:** the white template is not part of this kit)



- Temporarily attach the carbon panel to the panel frame. Gently lower the canopy frame and check for clearance. The aft arc of the canopy frame should reside between the canopy frame and the panel without interference. It is likely you will need to trim the carbon lip on the top of the carbon panel to achieve the final fit. Be careful of your cutting depth so you don't damage the underlying flange.
- **Reminder:** Lots of dust. Protect yourself and any equipment appropriately.



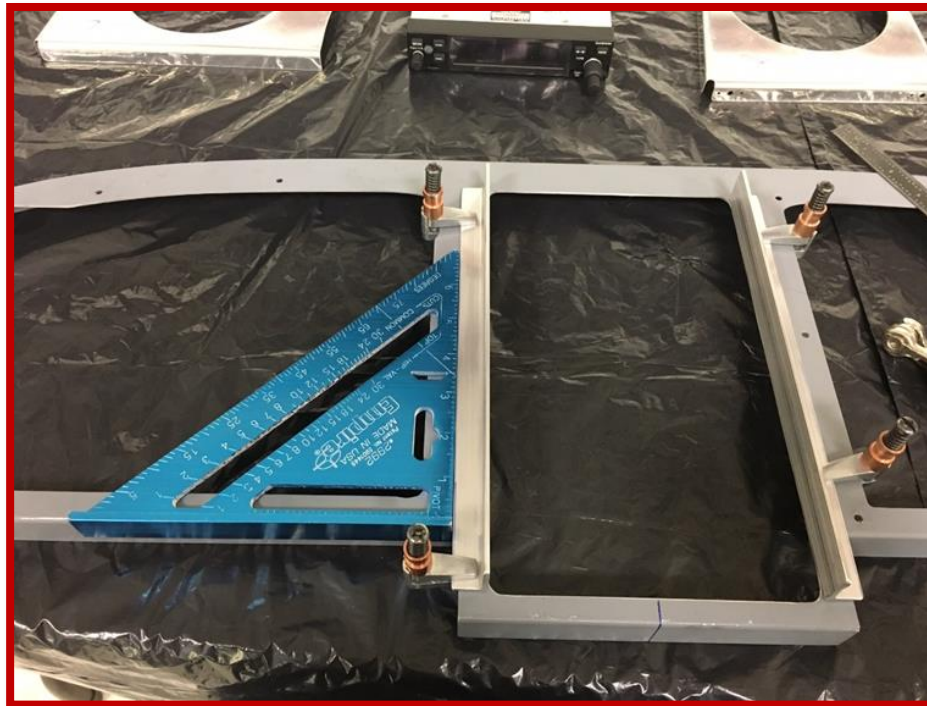
Avionics Installation

- As previously stated, the abundance of avionics choices, their dimensions, and placement make it impossible to detail the installation of avionics in this guide. The following example is of a two screen Garmin G3X Touch with VFR equipment in the center stack. There are different methods for installation...this is one of them. Adjust for your equipment choices and airframe/canopy type accordingly. Follow the manufacturer's directions as possible.

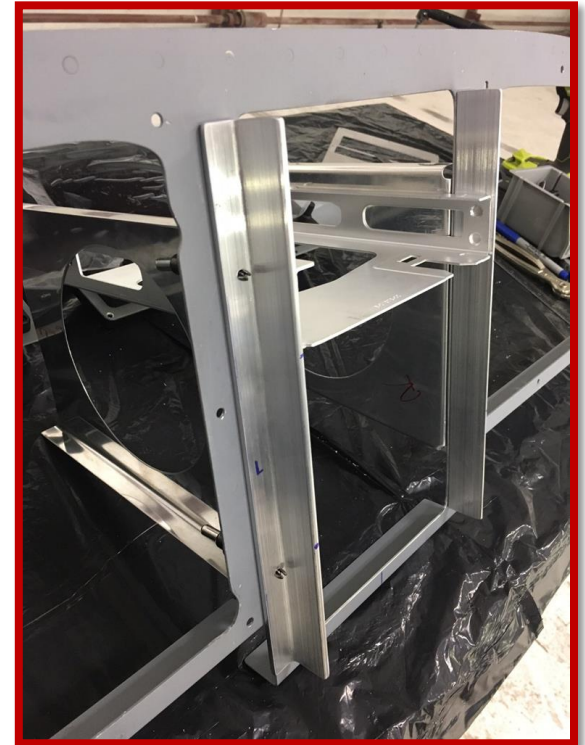
- You will need the aluminum panel inserts at this time. These can be purchased from Aerosport Products if you wish, or you can fabricate them on your own.
- You will need to make the appropriate cuts in these panels for your avionics and any other equipment.
- There are several companies that are well-versed cutting for avionics and already have the proper dimensions ready to go in their CNCs. Or...you can cut these on your own.



- With this installation example, two pieces of angle are attached to the face of the panel frame. The width of the radio tray was used to determine positioning.
- Also, verify the flange pointing aft will nest into the carbon panel.



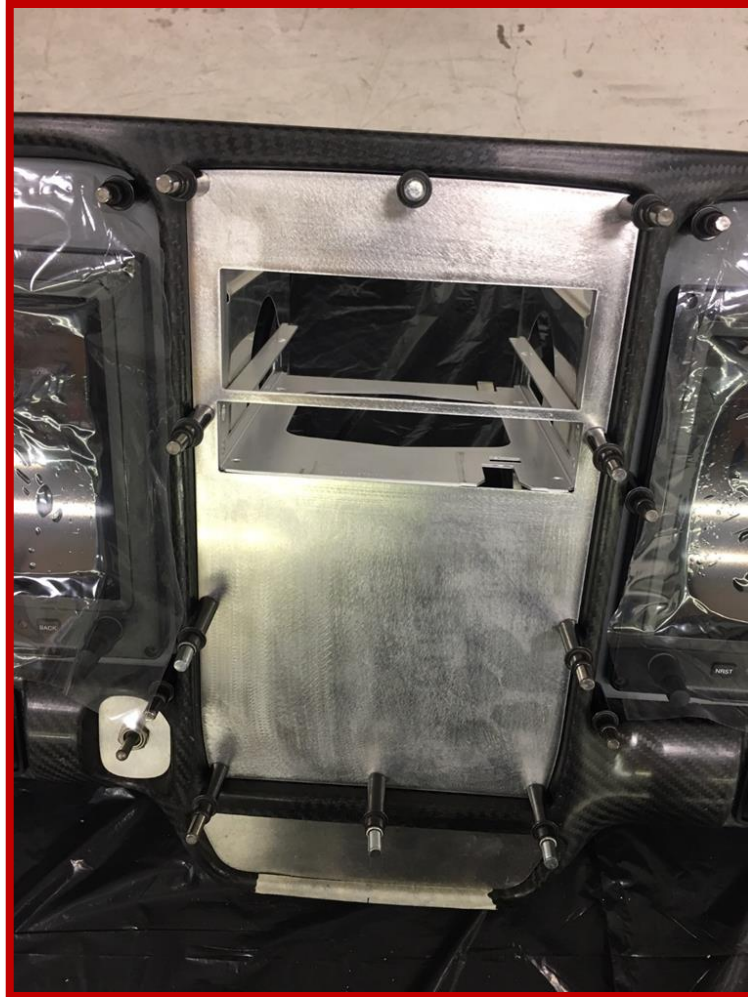
- You can see the radio tray and the aft portion of the previously cut F-745 L/R Forward Fuselage Ribs being positioned for attachment.
- Verify the proper fore and aft spacing as well.
- Attach with your choice of hardware.



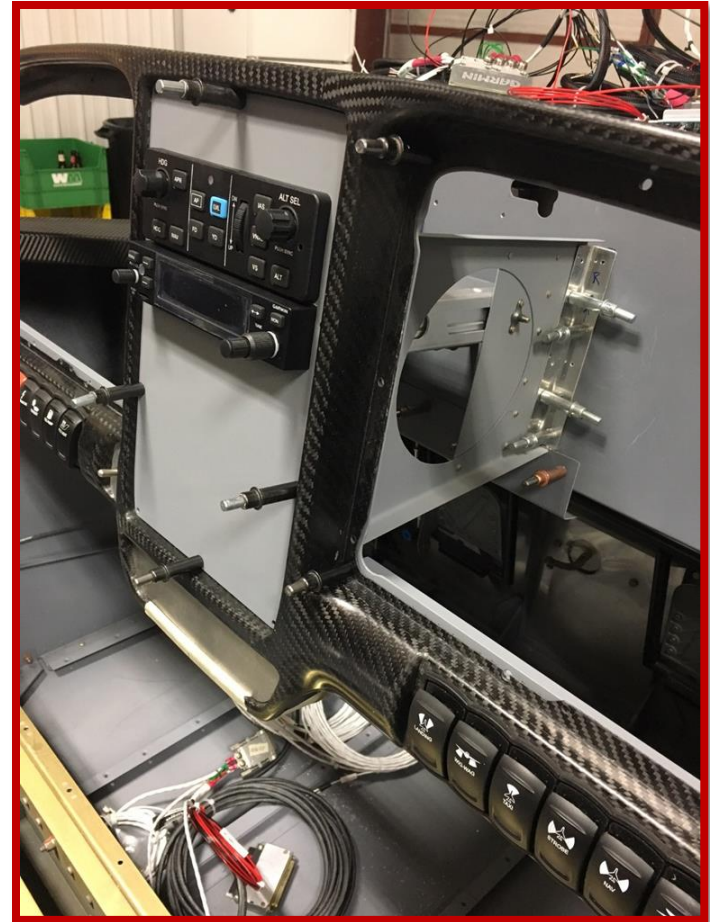
- The forward side of these modified ribs can be attached to the sub-panel with light angle.
- You may need to cut clearance for your avionics and/or wiring runs in the subpanel.
- **Tip:** It may be easier to temporarily attached these ribs until those steps are executed.



- Proper alignment and depth are verified by placing the carbon panel and aluminum insert in place.

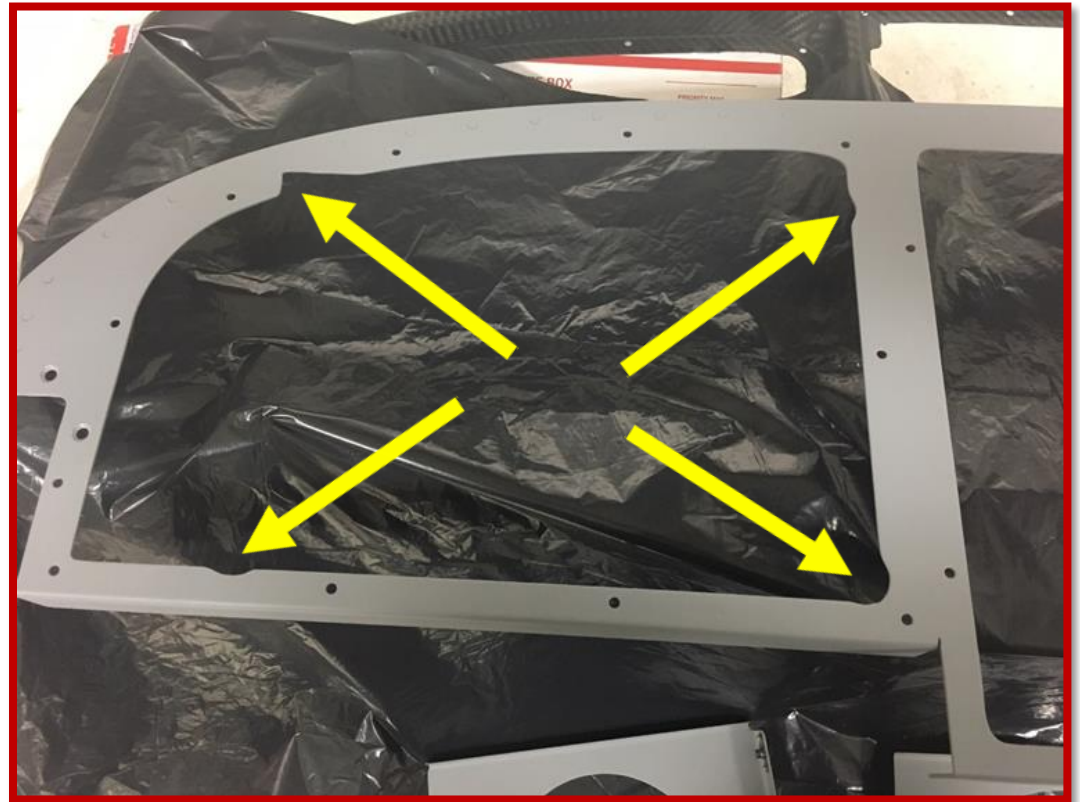


- Next, let's go ahead and check the actual fit of our instruments.

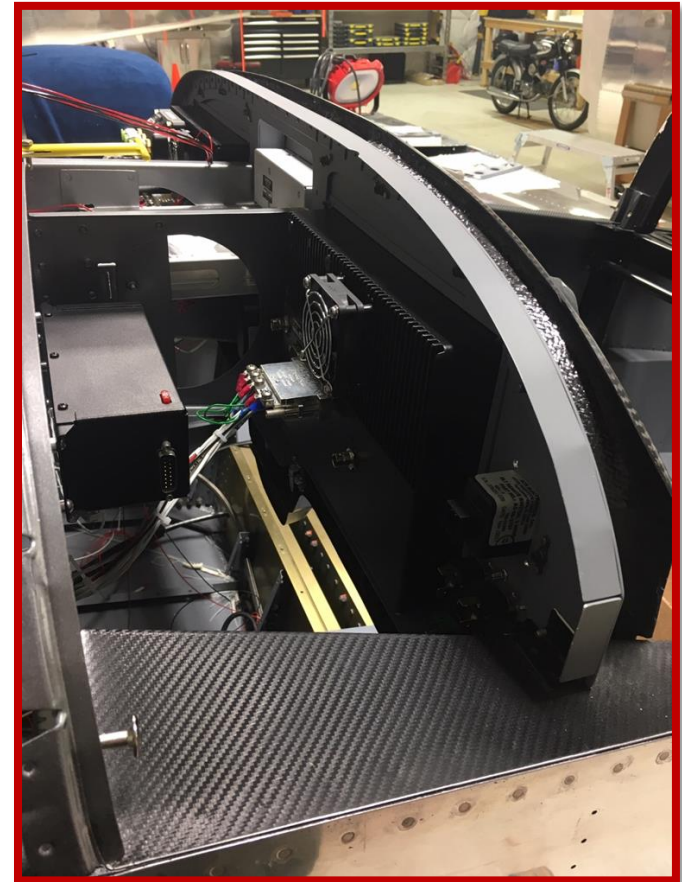


Looks great!

- Garmin includes mounting frames that will attach to the forward side of the panel inserts.
- There will likely be several areas in the panel and the frame that need trimmed to accommodate your avionics. Just be aware of edge distance, fasteners, and clearances.



- Follow the instructions for your particular brand of equipment to properly brace and secure the components.
- With a little more time and effort, your panel will really begin to take shape!



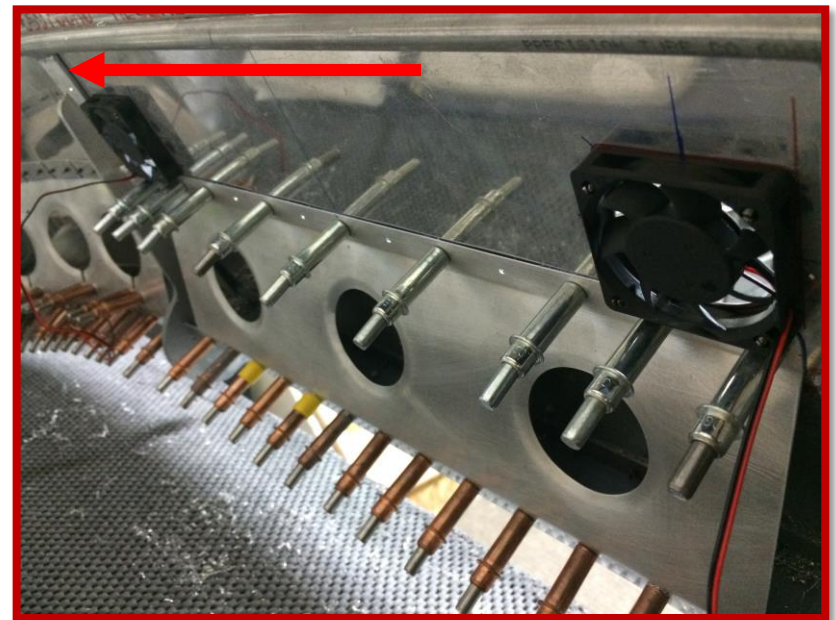
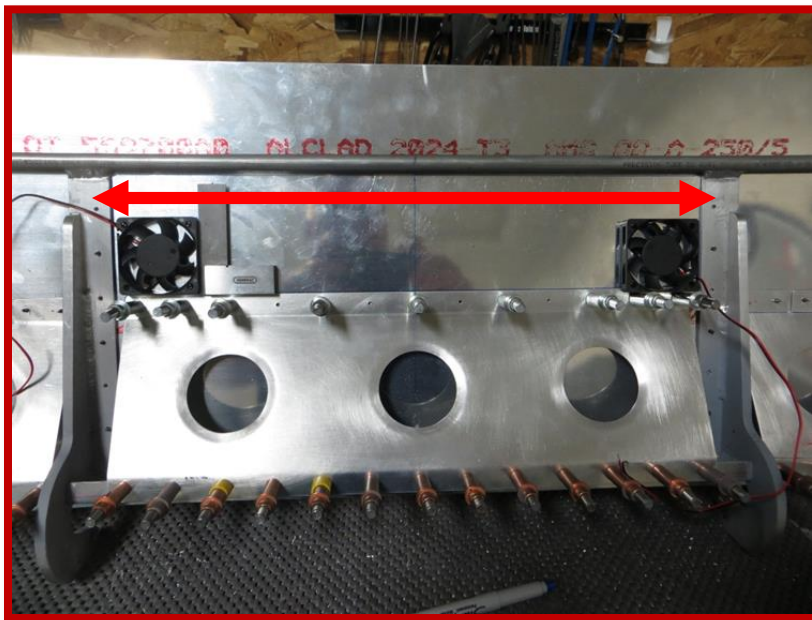
A Couple More Thoughts...

- The tip-up canopy has a quick release option. If installed per plans, the handle will reside in the upper portion of your radio stack area.
- Some have devised other ways to release the canopy with slight modification. These do not allow release in flight. Consider the ramifications from plans deviation.



- **Note:** These pictures illustrate incomplete canopy release installations, that deviate from Van's Aircraft prescribed plans.

- If you install computer fans for defrost, make sure and check the clearance of them in relation to the panel frame. Too large a fan will not allow the panel frame to properly nest with the canopy frame.
- Areas of concern indicated with arrows.



You Did It!!!

- Congratulations on installing your new panel from Aerosport Products!
- It's up to you to keep that carbon look, or you can paint the panel and inserts to compliment your interior.
- If you have any questions....please contact us:
- <https://www.aerosportproducts.com/contact.htm>
- Thank you and fly safe!